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Remarks

The following remarks are responsive to the Office Action dated March 7, 2006. Applicants respectfully request reconsideration in view of the remarks presented below and withdrawal of the rejections.

Status of the Claims

Claims 1, 2, 4-10 and 12-16 are pending.

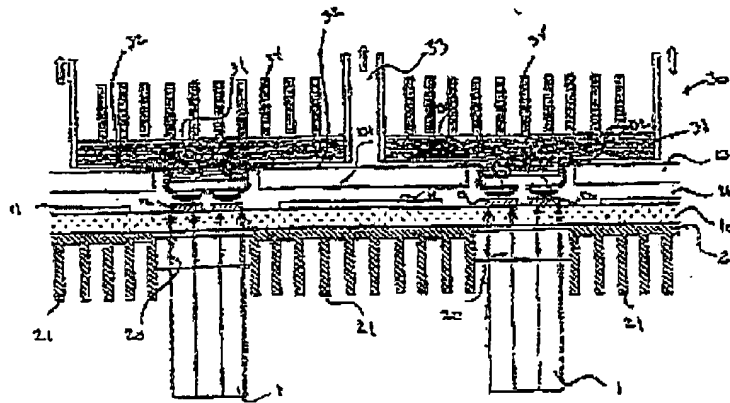
Claims 1, 2, 4-10 and 12-16 stand rejected under 35 U.S.C. §103.

Claim Rejections – 35 U.S.C. §103

Rejection of Claims 1, 2, 4, 5, 7, 9, 10 and 12-15 Over *Liu*

Claims 1, 2, 4, 5, 7, 9, 10 and 12-15 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent Application No. 2001/00482234 ("*Liu*"). Applicants respectfully maintain their traverse of the rejections of amended Claims 1 and 9 and their dependent claims for the reasons that *Liu* discloses an apparatus for solder-sealing an OLED and accordingly neither teaches nor suggests an organic electronic device comprising a heat sink wherein the heat sink has a side with a pattern that extends at least partially through a thickness of the heat sink, the heat sink has a thickness no greater than 9 mm, or an area:thickness ratio of at least 500:1, and the heat sink is attached to an array within the organic electronic device.

FIG. 1 of *Liu* (reproduced below) is a schematic view of a *solder-sealing assembly of an apparatus* for assembling an active matrix OLED 11 and not a view of an organic electronic device. It shows fins 34 for dissipating heat during soldering that are part of the base assembly 31 and heat sinks 21 that are part of the chuck assembly 20. Both the base assembly 31 and the chuck assembly 20 are part of the *sealing assembly* and not the OLED 11. See *Liu* at paragraphs [0044] and [0045]. After the sealing process, the sealing assembly is removed and the base assembly 31 with fins 34 and the chuck assembly 20 with heat sinks 21 are removed. The heat sinks and fins of *Liu* is used in the manufacturing process during sealing of an OLED device.

FIG.1 of *Liu*.

The sealing apparatus of *Liu* is designed with heat sinks so that temperatures in excess of 120° C (para. [0012]) may be used in the solder-sealing process to provide hermeticity in sealing; normally, the OLEDs would not be able to withstand such temperatures without degradation and unacceptable performance deficits. There is no suggestion whatsoever in *Liu* that heat sinks are needed for any purpose other than the method taught therein for solder-sealing arrays of OLEDs (to prevent moisture contamination). The processing temperatures in *Liu* are manifestly much greater than normal operating temperatures for an OLED array. Accordingly, there is no motivation derivable from *Liu* for attempting to adapt a heat sink array disclosed therein to an integral OLED device incorporating a heat sink, or to a heat sink that can be incorporated into an OLED device. The prior art as exemplified by *Liu* has not optimized any variable, including those of size, and does not suggest any such optimization of any parameter disclosed therein. In fact, there is no optimization of any result effective variable concerning the dimensions or other structural properties of the heat sink. Applicants submit that *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980) is not applicable to the facts presently under review. Therefore, it would clearly not have been within the contemplation of an artisan skilled in the art of solder-sealing OLEDs against air and moisture contamination to conceive of an organic electronic device/heat sink in which heat-dissipating materials could also function as conductors, insulators or electrodes.

Applicants in claims 2 and 10 claim pattern embodiments beyond the "fin" structure shown in the reference. The pattern can be a roughened surface or even a black coating (with no physical alteration of the surface)(see Figs. 5 and 6). The object is to provide a side of the heat sink furthest away from the organic layer that has a exposed surface area that is significantly larger than the footprint of the heat sink. This is the case whether the top or outer surface is patterned (mesas, islands, roughened, etc.) or not (please see page 10, lines 29-35 of the application). The ratio of outer surface:footprint promotes heat dissipation away

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from the footprint. While *Liu* discloses fins 34, there is no teaching or suggestion that the surface area of the fins should be significantly larger than that of the heat sinks 21. As a matter of fact, in Fig. 1 there appears to be a 1:1 correspondence between the heat sinks 21 and the fins 34 in terms of number, size and surface area.

Finally, the Action states that the organic electronic device of *Liu* can be implemented in a lighting pattern. While Applicants concede this point, as they must, they must also point out that the OLED in *Liu* is a work piece of the device and method claimed in *Liu* and not part of the invention disclosed. *Liu* discloses an apparatus and a method for solder-sealing an OLED, not an organic electronic device comprising a heat sink.

Because the heat sinks recited in the apparatus and method disclosed in *Liu* do not teach or suggest the elements of the invention claimed in pending Claims 1, 2, 4, 5, 7, 9, 10 and 12-15, there is no motivation to use a heat sink having the specifically claimed limitations without the benefit of hindsight after reviewing Applicants pending application. Applicants request the Examiner to withdraw this rejection.

Rejection of Claims 6, 8 and 16 Over *Liu* in View of *Sheridan*

Claims 6, 8 and 16 are rejected under 35 U.S.C. §103(a) as obvious over *Liu* in view of U.S. Patent No. 5,800,905 ("*Sheridan*").

For the reasons stated above, Applicants respectfully suggest that *Liu* does not teach the organic electronic device comprising a heat sink as claimed in pending Claims 6, 8 and 16. Claims 6 and 8 ultimately depend from amended Claim 1, and Claim 16 depends indirectly from amended Claim 9.

Sheridan discloses a pad including thermal insulation and heat sink areas whereby the pad can be used as a heat reflecting shield as well as a heat sink for dissipating heat at a desired location (Col. 2, lines 26-29). Additionally, the pad can include a plurality of layers and "at least one of the layers of the pad can include heat radiating means thereon. The heat radiating means can comprise a black surface on at least part of at least one side of at least one of the layers." (*Sheridan* col. 3 lines 17-20). The reference further states that "to dissipate heat from the pad, the heat radiating means such as a black surface can be provided on one or more portions of the pad located away from the site which is to be shielded from the heat" and "the black surface coating can be provided [sic] which will facilitate removing the heat to the heat sink area or heat sink areas." See *Sheridan* at col. 3 lines 27-30 and lines 34-37.

The primary applications of *Sheridan*'s pad is in automotive or trucking uses and perhaps other commercial or industrial settings. One such example is to dissipate heat from a "hot spot" such as an automotive exhaust manifold (please see Example 1, Col. 11, lines 1-7). Moreover, the pad requires a "stack" of metal foil (material that may shield or conduct heat). *Sheridan* expressly teaches that the heat sink area requires the foil to be more closely packed

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in the heat sink portion of the stack than in the heat insulating, or shielding, portion of the stack (Col. 2, lines 39-42). It is not seen how one skilled in the art of fabricating organic electronic devices would even be aware of *Sheridan*, much less combine *Sheridan*'s dark coating with the fins 34 or the heat sinks 21 in *Liu*. These fields are so distinct that it is unlikely that one skilled in the art of OLED fabrication would have known of both, and had such skilled artisan been aware of both, that the artisan would have found the motivation to modify *Liu* and then combine said reference with *Sheridan*.

Based on the foregoing, there is no teaching or suggestion to combine the heat sink of *Liu* with the multi-layer pad having a black surface to achieve the invention of pending Claims 6, 8 and 16. Moreover, there is no motivation to achieve the invention of the pending claims without the benefit of hindsight after reviewing the pending application.

Sheridan does not make up the deficiencies of *Liu* in that it does not teach or suggest the elements missing from *Liu* and does not teach or suggest an organic electronic device comprising a heat sink wherein the heat sink has a side with a pattern that extends at least partially through a thickness of the heat sink, the side with the pattern has a black surface or wherein the side with the pattern is black.

Consequently, neither *Liu* nor *Sheridan*, when read alone or together, teach or suggest the subject matter of amended pending Claims 6, 8 and 16. Thus, the above referenced rejection should be withdrawn.

Conclusion

Applicants respectfully submit that in light of the foregoing remarks, the pending claims are in condition for allowance. Should the Examiner find that some, or all, the rejections are to be maintained, Applicants request the issuance of an advisory opinion, on the grounds that this paper is being filed timely within the shortened two-month period specified for response, examination, and issuance of such opinion. The two-months expired on Sunday May 7, so by operation of 37 C.F.R. §1.7(a), the paper is timely filed today, Monday May 8.

A Notice of Appeal accompanies this submission.

Should the Examiner have questions about the status of the application or the contents of this paper, the Examiner is invited to call the undersigned at the telephone number listed below.

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Respectfully submitted,



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